case will set a precedent for other local governments to enforce sewage cleanup.

Carcinogens in Food

Labeled a "finding sure to appeal to anyone tired of washing vegetables in detergent to remove pesticides" by a *New York Times* health columnist, the National Academy of Sciences National Research Council's February report, *Carcinogens and Anticarcinogens in the Human Diet*, found little to be alarmed about concerning links between chemicals in food and cancer. "I've really been surprised at the great interest that has resulted from the study, and from the message that if you use common sense when you eat, you're alright," says Ronald Estabrook, a biochemistry professor at Southwestern Medical Center in Dallas who headed the 20-member panel that issued the report.

Specifically, the report found that, based on existing data, the great majority of naturally occurring and synthetic chemicals in the diet appear to be present at levels below which "any significant adverse biologic effect is likely, and [are] so low that they are unlikely to pose an appreciable cancer risk." Conversely, the varied and balanced diet needed for good nutrition "also provides significant protection from natural toxicants," the report says. The real cancer culprits in diet, the committee suggests—as other NRC reports have concluded—are excess fat and calories.

But others say there is much more to the story than appears beneath the "sigh-of-relief" headlines. Although the NRC committee made much of the fact that little scientific evidence exists on which to base their conclusions, this point was not adequately communicated to the public, according to committee member Bernard Weinstein, director of the Columbia-Presbyterian Cancer Center in New York. "I would have started the report emphasizing that we need much more intensive research in this area. There are a lot of open questions here and I wouldn't give a clean bill of health to these trace amounts of chemicals yet." As an example, Weinstein cited findings made public in April, after the report's release, that a gene known as *Shinga* can be transferred into bacteria and spread a toxin to humans from ground meat. "This is a minor compound, a natural chemical in beef. We should not be lulled into false security," he said.

There is also criticism of the committee's composition. According to Samuel Epstein, a professor of occupational and environmental medicine at the University of Illinois at Chicago, the group is "disproportionately weighted with industry consultants and others who trivialize the significance of avoidable exposures to industrial carcinogens in air, water, food, and the workplace, and who exaggerate the role of lifestyle risk factors and of naturally occurring carcinogens, particularly 'natural pesticides' in food." Epstein voiced such concerns to the NAS as far back as 1993 in his role as chairman of the Cancer Prevention Coalition, Inc., which bills itself as a coalition of independent experts in public health and cancer prevention. Al Meyerhoff, senior attorney with the Natural Resources Defense Council, agrees, saying that the conclusions suffer from "serious data gaps on toxins and exposures that make the report a dubious exercise. Increasingly, when dealing with cancer risk, 'science' is in the eye of the beholder," he says. "Different scientists reach fundamentally different conclusions."

Estabrook argues that the committee was unbiased and unanimous in its conclusions. But he concedes that the "database is shallow. We looked at what exposure data was available and we put it all into perspective. This is by no means the final word."

Getting tough on dumps? A new EPA rule includes stricter air pollution controls for large landfills, while a new law may exempt smaller dumps from ground water monitoring.

New Laws on Landfills

New environmental rules for landfills seem to be moving in opposite directions: more stringent for larger landfills and less burdensome for smaller ones. On one hand, the EPA has determined that landfills are a source of air pollution and has issued a new rule requiring large municipal solid waste landfills to control their emissions of certain gases. On the other hand, President Clinton has signed into law legislation allowing states to ease certain environmental requirements for small landfills, as long as human health and the environment remain protected.

The new EPA rule, promulgated under the Clean Air Act, aims to reduce landfill emissions of smog-creating volatile organic compounds (VOCs), some of which are also known or suspected carcinogens such as benzene, vinyl chloride, and chloroform. The rule will also cut methane emissions in half which, in terms of reducing greenhouse gases, is the equivalent of taking 20 million cars off the road, according to a statement issued by EPA Administrator Carol Browner. Methane is about 25 times more powerful than carbon dioxide (the primary greenhouse gas) in trapping heat in the earth's atmosphere, according to the EPA.

The rule applies to landfills for household waste—not hazardous waste—with a capacity of 2.5 million cubic meters or greater. Those landfills that are found to emit more than 50 megagrams per year of VOCs will be required to drill collection wells to contain the gas. In turn, the gas may be routed to either an energy recovery system, where it can be captured for use, or to a combustion device, where it can be safely burned.

Although the rule is an important step in reducing ozone-forming VOCs, its primary benefit will be in methane reduction, said Dan Lashof, a senior scientist for the Natural Resources Defense Council (NRDC). "Landfills are an important, but relatively small, source of ozone-forming compounds," Lashof said. "But they are one of—if not the—biggest sources of methane." The process of capturing the VOC emissions will also net significant amounts of methane, Lashof said. In addition, the rule requires landfills to monitor surface methane on a quarterly basis and expand their collection wells if these emissions exceed 500 parts per million.

Of 7,000 landfills nationwide, the EPA estimates the rule will affect up to 280. Total costs nationwide are estimated at $778 million in one-time capital costs and $93 million annually, which the EPA estimates will translate into customer costs between $0.20 and $0.40 monthly. These customer costs could be offset by landfills selling the energy generated through the recovery systems.

Industry representatives are generally supportive of the new rule. "Lots of private landfills are already collecting methane, and this will just require more fine-tuning," said Ed Repa, director of environmental programs for the National Solid Waste Management Association.

"It's a workable rule," said Chris Voell, director of technical services for the Solid Waste Association of North America, "though, as a direct public health concern, we don't think EPA had all the data they needed to say methane has an impact on health."

For small landfills, defined as those that accept 20 tons of solid waste or less per day, amendments to the Solid Waste Disposal Act, signed into law on March 26, could mean less stringent regulations. One provision, authored by Senator Pete Domenici (R-New Mexico), requires the EPA to develop guidelines that afford states flexibility in regulating small landfills while still protecting human health and the environment.

The guidelines, which must be developed within two years, will address four areas: frequency of cover application, frequency of monitoring, infiltration layers for final cover, and means of demonstrating financial assurance. Domenici's office said that, while states currently have a good deal of flexibility to design solid waste regulations to fit local needs, the rules in these four areas are too rigid. According to EPA staff, the current rules require landfill operators to cover solid waste with dirt every day, monitor methane on a quarterly basis, install a final cover of 24 inches of earthen material, and be able to demonstrate they have the money to provide closure and post-closure care for the landfill. The amendments will likely only apply to landfills in dry, remote areas, according to the EPA, where groundwater contamination is less of a potential problem.

Another provision in the amendments exempts small landfills from groundwater monitoring requirements if they are located in an area that receives less than 25 inches of precipitation annually, unless the state finds such monitoring necessary to protect groundwater resources. An earlier EPA attempt to create this exemption by regulation was overturned by the U.S. Circuit Court of Appeals for the District of Columbia, which found the agency did not have authority to issue the exemption.

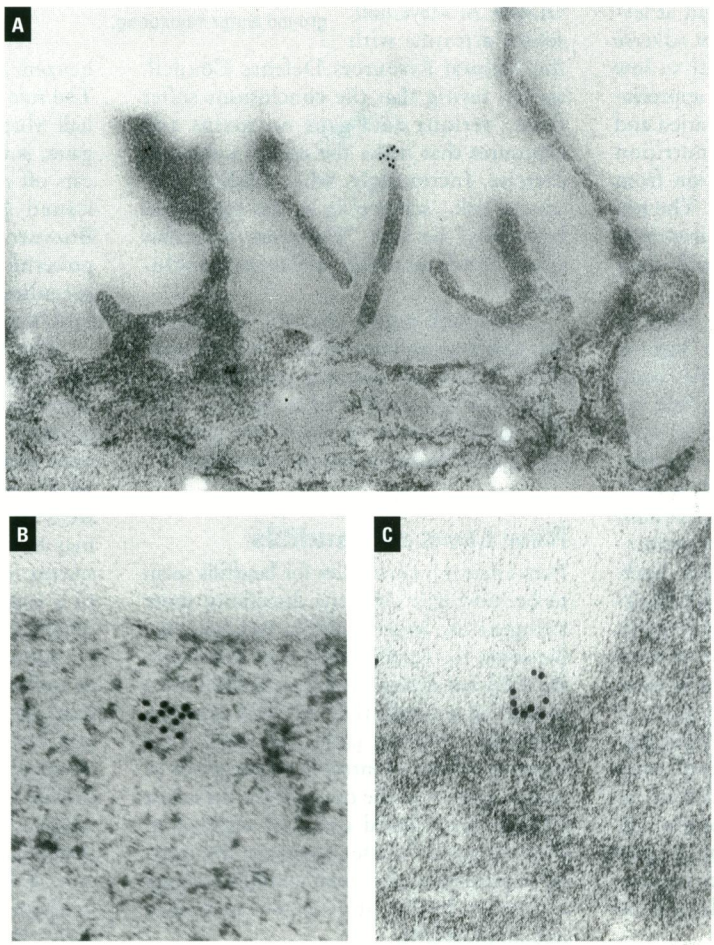
"The irony is, a landfill's not eligible for the exemption if you have evidence of groundwater contamination, but without groundwater monitoring you can only prove the contamination if it shows up in someone's well," said David Lennett, an attorney who has represented the NRDC.

Proponents of the small-landfill measures say they are necessary because the stringent requirements for large landfills in some cases are simply unnecessary—and unaffordable—for small landfills in arid climates. For example, the New Mexico Environment Department estimates Domenici's provision could save the state $50 million over the next 10 years.

"It's just adding some common sense to the process," said Tom Kennedy, executive director of the Association of State and Territorial Solid Waste Management Officials. If an area doesn't get enough rainfall to create leachate, measures aimed at reducing and monitoring leachate are not needed, he said.

However, other industry groups remain skeptical. "It doesn't make sense from a public health perspective," Repa said. "It is in arid, remote areas where people are drinking groundwater from wells, rather than municipal treatment systems," he said. "So it makes sense to require monitoring wells there." Repa estimated the cost of installing a monitoring well to be about $4,000, plus an annual $1,000 to monitor it. "If you look at the cost, it's small compared to remediation," he said.

"Subtitle D [of the Resource Conservation and Recovery Act] was supposed to close down the small landfills, and create larger ones with more environmental protections through economy of scale," Repa said. "This [exemption] would allow the status quo at those smaller facilities." However, according to Domenici's office, in large states like New Mexico, consolidation of small landfills may not always be a cost-effective option.



Working outside the cell? Micrographs (A, B, and C in successively higher magnifications) showing granules apparently secreting BRCA1 protein outside the cell suggest that it may be possible to design drugs to mimic the protein's effects. Source: Jensen RA et. al., BRCA1 is secreted and exhibits properties of a granin. *Nature Genetics,* 12:303–308, (1996).

Using *BRCA1* to Treat Cancer

In the two years since the gene for inherited breast cancer, *BRCA1*, was identified, researchers have been trying to understand how the gene normally works. A team from Vanderbilt University and the University of Washington has now shown that *BRCA1* suppresses the formation and growth of breast tumors in mice. Their results, published in the March issue of *Nature Genetics*, suggest that the gene or drugs that mimic its protein product might someday be used to treat human breast and ovarian cancer.

"This is what everybody had hoped—that there would be a